

CLAIMS

What is claimed is:

1. In a vehicle powertrain comprising an engine coupled to an electronically-controlled automatic transmission, a method for controlling the vehicle powertrain during a transmission shift from a neutral gear to a drive gear, the method comprising:
detecting a change in a signal indicative of a desired transmission gear change from a neutral gear to a drive gear;
reducing an engine idle speed by a predetermined RPM in response to said change in said signal; and
shifting the transmission from the neutral gear into the drive gear upon said engine idle speed being reduced by said predetermined RPM.
2. The method of claim 1 further comprising generating an impending shift signal indicative of an imminent transmission shift from said neutral gear to said drive gear; and increasing an output torque of the engine in response to said impending shift signal.

3. The method of claim 1 further comprising shifting the transmission from the neutral gear to the drive gear upon expiration of a fail-safe timer if the engine idle speed is not reduced by said predetermined RPM within a predetermined time after detecting said change in said D/N signal.
4. The method of claim 1 wherein said step of reducing an engine idle speed is accomplished by controlling a combustion air flow into the engine.
5. The method of claim 4 wherein said step of reducing an engine idle speed further comprises controlling a spark angle of the engine via an ignition angle control.
6. The method of claim 1 wherein said predetermined RPM is determined as a function of a catalyst temperature.

7. A vehicle powertrain system comprising:
- a PCM having an engine segment and a transmission segment;
 - a communications block for communication between said engine segment and said transmission segment;
 - an engine having an idle speed controlled by said engine segment;
 - a transmission coupled to said engine, said transmission having a drive gear and a neutral gear selected by said transmission segment; and
 - a drive/neutral signal for indicating a desired transmission gear to said transmission segment; wherein said engine segment reduces said idle speed by a predetermined RPM upon said drive/neutral signal indicating a desired transmission gear change from said neutral gear to said drive gear, and said transmission segment changes said transmission gear from said neutral gear to said drive gear after
8. The vehicle powertrain system of claim 7 further comprising an exhaust catalyst connected to said engine, said predetermined RPM being a function of an exhaust catalyst temperature.

9. The vehicle powertrain system of claim 7 further comprising an idle air control valve controlled by said engine segment, said reduction in idle speed being effected at least in part by controlling said idle air control valve.
10. The vehicle powertrain system of claim 7, said engine having a spark angle controlled by said engine segment, said reduction in idle speed being effected at least in part by reducing said spark angle.
11. The vehicle powertrain of claim 7 further comprising a fail-safe timer initiated upon said drive/neutral signal indicating a desired transmission gear change;
said transmission segment changing said transmission gear from said neutral gear to said drive gear upon the earlier of expiration of said fail-safe timer and said idle speed being reduced by said predetermined RPM.
12. The vehicle powertrain of claim 7 further comprising an impending shift signal indicative of an imminent transmission shift from said neutral gear to said drive gear; said engine segment increasing an output torque of the engine in response to said impending shift signal.